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AN EXPLORATORY STUDY OF READING-THINKING PATTERNS AMONG CHILDREN OF VARYING ABILITIES.

BY- HENDERSON, EDMUND H. LONG, BARBARA H.
UNIVERSITY OF DELAWARE, NEWARK

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THE RELATIONSHIP BETWEEN "READING DECISIONS" AND EACH OF THE FOLLOWING VARIABLES WAS INVESTIGATED--(1) READING ACHIEVEMENT NOT RELATED TO INTELLIGENCE, (2) INDEPENDENT MEASURES OF ORIGINALITY AND OPINION FORMATION, AND (3) THE PERSONALITY CHARACTERISTICS OF INDEPENDENCE, INDIVIDUALISM, AND SELF-ESTEEM. THE TERM "READING DECISIONS" WAS USED TO DENOTE INDIVIDUAL STUDENT RECOGNITIONS OF THE POSSIBILITY OF DIVERGENT PLOT OUTCOMES AT THE BEGINNING AND AT THE MIDPOINT OF A STORY. IN THIS STUDY, MEASURED "RECOGNITIONS OF POSSIBILITIES" WERE OBTAINED FROM A SAMPLE OF HIGH-ABILITY FIFTH-GRADE STUDENTS, BEFORE AND DURING THEIR READING OF A SHORT STORY. NO SIGNIFICANT RELATIONSHIPS WERE FOUND BETWEEN THE STUDENTS' "READING DECISIONS" AND THE VARIABLES OF ORIGINALITY, OPINION FORMATION, OR PERSONALITY CHARACTERISTICS. SOME SIGNIFICANT INTERACTIONS, HOWEVER, WERE FOUND BETWEEN CERTAIN ASPECTS OF "READING DECISIONS" AND READING ACHIEVEMENT CORRECTED FOR IQ. THIS FINDING WAS REPLICATED USING A LARGER SAMPLE POPULATION. IN A MAJOR BYPRODUCT OF THIS STUDY, THE INVESTIGATORS WERE ABLE TO RELATE SEVERAL MEASURES OF SELF-CONCEPT TO READING ACHIEVEMENT RELATIVE TO ARITHMETIC. THOSE STUDENTS WITH HIGH READING ACHIEVEMENT SCORES (RELATIVE TO READING ACHIEVEMENT CORRECTED FOR ARITHMETIC) SHOWED BETTER SOCIAL ORIENTATIONS AND APPEARED TO DISCRIMINATE THEMSELVES AS BEING BOTH DIFFERENT AND COMPLEX. GIRLS WITH HIGH READING ACHIEVEMENT SCORES WERE SIGNIFICANTLY HIGHER IN SELF-ESTEEM THAN WERE BOYS WITH HIGH READING ACHIEVEMENT SCORES. (JH)

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Edmund H. Henderson
Barbara H. Long

University of Delaware
Newark, Delaware

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AN EXPLORATORY STUDY OF READING-THINKING PATTERNS AMONG CHILDREN OF VARYING ABILITIES [1]

Introduction

While conducting the present study the experimentors made an interesting finding among a different sample when relating scores on originality to reading controlled for arithmetic.[2] Differential achievement in reading relative to arithmetic proved to be a variable of considerable interest and one that has been rather widely studied. Since the present data lent itself to such an examination, the arithmetic variable was applied and its correlates in the Self-Social Symbol Tasks examined. Findings from this exploration are reported under Study B. Findings related to the original proposal are reported under Study A.

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2. Long, Barbara H. and Henderson, E. H. Originality, reading, and arithmetic, Perceptual and Motor Skills, 1965, 21, 553-554.

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Study A. Reading Decisions in Relation to Certain Social, Cognitive, and Achievement Variables.

Abstract

Reading decisions made by 81 achieving fifth-grade pupils before and during the reading of a simple story were studied in relation to reading achievement corrected for intelligence, and to measures of opinion formation, originality, and self concept. No significant relationships were found between opinion formation, originality or reading achievement corrected for intelligence on the overall measures of the Reading Decisions Test. No significant relationships were found between the several self-concept measures and Reading Decisions. A significant interaction ($p = .05$) was found between reading achievement corrected for intelligence and decisions made before reading and at the midpoint of the story. This finding was replicated ($p = .05$) in a second and larger sample of fifth grade pupils and was interpreted as implying that one aspect of reading efficiency involves the ability to maintain an awareness of possibilities and to resist premature closure.

Study A. Reading Decisions in Relation to Certain Social, Cognitive, and Achievement Variables.

This study has employed a test of Reading Decisions designed to measure a pupil's recognition of the possibility of divergent plot outcomes at the beginning and at the midpoint of a short story. It was assumed that the cognitive processes accompanying the reading act would affect the reading product. It was proposed that reading comprehension as measured by the convergent questions of a standardized test would be influenced by decisions of a more divergent nature made before and during reading.

Problem

Specifically the following questions were asked:

1. Does a recognition of possibilities, as measured by the Reading Decisions Test, account for part of the variance in reading achievement not related to intelligence, as measured by standardized tests?

2. To what degree does a recognition of possibilities, as measured by the Reading Decisions Test, reflect skill in divergent thinking and/or styles of opinion formation?

3. Are the personality characteristics of independence, individualism and self-esteem related to the recognition of possibilities and avoidance of premature closure as measured by the Reading Decisions Test?

Related Research

Authorities in the field of reading have long been committed to the opinion that reading must be understood and taught, not as a simple mechanical skill, but rather as a complex intellectual habit. As Gates (1949) expressed it, reading "can and should embrace all types of thinking, evaluating, judging, imagining, reasoning, and problem solving."

While the virtue of creative thinking is widely acclaimed, in practice most pupils are told what answers to seek and then are examined by a series of questions demanding a replication of the significant facts and inferences declared. In such a method little opportunity exists for the observation of the divergent cognitive skills presumably involved in the recognition of possible outcomes, the formulation of hypotheses, and the maintenance of an open mind that remains alert to new information as it emerges.

In contrast to the common method of reading recitation, the Group Directed Reading-Thinking Activity developed by Stauffer (in press) emphasizes a wide range of cognitive skills that appear relevant to reading efficiency. While critical analysis based upon classroom and clinical experience would argue the soundness of this approach, there is little experimental evidence to demonstrate the specific parameters upon which this method is founded. Moreover, the study of this aspect of reading-thinking is made more difficult by the convergent design of most reading tests which tend to obscure the possible effects of divergent skills.

In a study based upon the Stauffer approach, Henderson (1965) compared good and poor readers, (defined by deviation scores on SCAT and STEP Reading Tests), on their skills in formulating individual purposes

while reading a story. Subjects' responses were recorded, and the typed protocols rated for number of conjectures, number of purposes, use of evidence, creativity, and oral expression. Significant differences ($p = .01$) were found between good and poor readers on this measure. It was concluded that divergent cognitive skills are related to effective reading.

The limitations imposed by protocol analysis and rater evaluation suggested the need for a group test that might measure a range of responses similar to those identified by the Henderson Purpose-setting Scales. The Reading Decisions Test was therefore constructed. In this test, subjects are presented with statements of possible outcomes in a story. They are required to recognize possible and probable outcomes, and to discriminate between these and statements that are clearly true or false. A preliminary study has indicated that the Reading Decisions Test has adequate reliability for experimental purposes, and is readily administered to groups.

It is hypothesized that the recognition of possibilities, as measured by the Reading Decisions Test, is one aspect of skill in divergent thinking. It is also possible that the recognition of possibilities is related to a general response style of open-mindedness. Personality characteristics, such as individualism, independence, and self-esteem may also be related to an avoidance of premature closure that presumably underlies the recognition of possibilities.

While focused upon the reading, the present study fits also in a program of research that has attempted to integrate cognitive skills, usually considered as abilities, with cognitive habits, ordinarily

considered aspects of personality. A recent study (Long & Henderson 1965) has indicated that divergent thinking, as measured by Torrance's Lines Test, is related to a cognitive style of open-mindedness, as measured by the Long-Henderson Children's Opinion Scale. Specifically, a positive relationship ($p = .05$) was found between fluency on the Lines Test and a "don't know" response on the Opinion Scale to statements of opinion that were neither true nor false (e.g. Man will be on the moon by 1968). A more complex relationship was found between flexibility and originality and the "don't know" response ($p = .01$ for both). These findings suggest that open-mindedness may be one aspect of divergent thinking. It is here proposed that such cognitive behavior is also employed in the recognition of possibilities while reading.

Studies of personality variables and reading have largely concentrated upon reading failure rather than success. Bower and Holmes (1959) concurred with an earlier conclusion by Gates (1941) that "there is no single personality pattern characteristic of reading failure." Personality styles and reading achievement have been similarly illusive (Holmes 1961). Nonetheless Strang, McCullough, and Traxler (1961) declare that the individual's approach to reading is "profoundly affected by his self-concept." And this general view is accepted by a number of others (Tinker and McCullough 1962; Harris 1961; Smith 1963; for example).

An exploratory study (Henderson, Long & Ziller 1965) which compared the self and social constructs of achieving and non-achieving readers matched for age, sex, and intelligence, revealed a greater degree of individualism and independence for the good readers. While these findings suggest that personality characteristics are related to reading,

the question remains whether the differences found are related to reading achievement or to the negative experiences of failure. It would seem, however, that independence, individualism, and self-esteem might well be attributes of the individual who was able to affirm varying numbers of conflicting possibilities while reading. A positive relationship between these variables and the recognition of possibilities is thus hypothesized.

Method

The Reading Decisions Test was prepared for this study and designed as follows: Pupils see first a title page on which appears the name of the story, "Guest Artist," and author-illustrator, Margaret R. Newlin. Page two is a picture drawn to illustrate the first scene in the story, an artist's studio in Paris. Pages three and four contain 30 statements, all of which are possible on the basis of the evidence given in the title and picture.

Directions for pupils are given before they turn to page one. IBM scoring sheets and marking pencils are passed out and pupils are told that they will first read a title of a story, study a picture that goes with the beginning of the story, and then be asked to rate 30 statements about the story according to their best judgment. For each statement they are to decide whether the best answer is (a) definitely yes, (b) probably yes, (c) possible, (d) probably no, (e) definitely no. A marking key is drawn on the board and one is also printed at the top of each page of statements.

Pupils are told that they must first read the title, next study the picture and then decide about the statements. At no time may they turn back to a page they have already read or studied. When the state-

ments are completed, pupils are directed to read the story until they come to another set of statements. They are to decide about each of these statements without turning back and then read to the end. This second stop comes at the midpoint of the story immediately following an illustration that forecasts a coming event (father and son walking to the art show in the evening).

The statements in the second stop repeat the first 30 and add 30 new statements all of which are possible. On the basis of evidence declared so far in the story most of the original items become clearly either true or false, though a few remain possible.

In every case only the first and last 30 items--those that are indeed possible outcomes on the basis of evidence at hand--are used for scoring. In order to compare changes in the thinking processes between the beginning and midpoint of the story, separate scores were determined for the first and last 30 items.

Three scoring procedures were used: (1) a "definite" score consisting of a simple count of all definitely yes and no items, (2) a simple count of possible items, and (3) a more inclusive score termed "open-mindedness" consisting of a weighted total of 2 for possible, 1 for probable, and 0 for definite. An odd-even split half test for internal consistancy of the open-mindedness score corrected for length yielded an $r = .90$.

As independent measures of originality and opinion formation, use was made of Torrance's Lines Test (1962) and the Long-Henderson Children's Opinion Scale, respectively. The latter scale consists of 30 statements of opinion with no basis in fact (e.g. Lake Superior is

the most beautiful lake in the world). These statements are read aloud and subjects respond by circling "yes" for agreement, "no" for disagreement, or "don't know," on answer sheets. The score consists of the number of "don't know" responses. Scores from this test were found to have split-half, corrected for length reliabilities of from .71 to .84 for children in grades two through seven, and to be significantly related to scores from Torrance's Lines Test.

Measurement of several aspects of the self concept was made with the Self-Social Symbols Tasks, a non-verbal instrument designed by the present authors and Robert C. Ziller, and previously used in a variety of problems and populations. (Ziller, Megas & Decencio 1964; Ziller, Alexander, & Long 1964; Ziller & Long 1965; Long, Henderson & Ziller 1965; Long & Henderson 1966; Long, Ziller, Ramana & Reddy 1966). Specific descriptions of each task along with evidence for construct validity for this test is reported under method in Study B. Reliability coefficients (split-half corrected for length) were completed for each measure. These ranged from .65 to .94 with a median of .85 with the exception of power. The latter measure did not attain a satisfactory level and was henceforth dropped from future analyses.

Subjects and Design

Four tests--Reading Decisions, Self-Social Symbols Tasks, Children's Opinion Scale, and Torrance's Lines--were administered to 81 fifth-grade pupils in three high-ability sections of the Quarryhill Elementary School, Yardley, Pennsylvania. These subjects were largely advantaged, white, upper-middle class children living in a young-executive section of that community. Testing was carried out in two

sessions, morning and afternoon, on a group basis by the experimentors assisted by the classroom teachers and school principal.

Scores for intelligence (Lorge-Thorndike Intelligence Test) and reading (Iowa Test of Basic Skills) were obtained from the school records. Mean scores were: IQ = 122.0 and reading grade level = 8.0. It was felt these children represented a highly successful academic group.

To obtain a reading score corrected for intelligence, reading comprehension scores were regressed on those for IQ. Corrected scores correlated -.03 with intelligence and .77 with reading. Open-mindedness scores from the Reading Decisions Test were correlated with all other measures. Subjects were also divided into quarters on the basis of the reading corrected for intelligence scores in order to identify a high and low reading group. From the sample of 81, the top and bottom quarter for boys (N = 8) and for girls (N = 12) were designated high and low readers, and reading decisions scores were examined for this sample.

Results

Intercorrelations between the test of Reading Decisions, (overall open-mindedness scores) and other variables are shown in Table I. The following correlations were found between the three measures of Reading Decisions and Reading corrected for intelligence:

Reading Decision, definite score and R/I	$r = -.20$ $p = .10$
Reading Decision, open-mindedness score and R/I	$r = +.18$ $p = .10$
Reading Decision, possible score and R/I	$r = +.18$ $p = .10$

Table 1

Intercorrelations with Test of Reading Decisions

	R/I	IQ	Reading	D.K.	Orig.
Reading Decisions	+.18	-.03	+.13	-.01	-.13
Reading Corrected for Intelligence		-.03	+.77	-.05	-.03
IQ			+.55	-.02	+.16
Reading				-.03	+.08
Withholding Opinion					+.02
Originality					

A closer inspection of the data revealed that the pattern of responses on the first and second stop in the Reading Decisions Test were different for the high and low readers. Those in the top quarter showed an increase on the open-mindedness score between steps one and two of 4.6 points, a gain significant at the .10 level. Those in the lowest quarter showed a decrease, but not a significant one, of 2.0 points. A comparison of the difference scores between the two groups yielded a $t = 2.03$ ($p = .05$). Thus, there was a significant interaction between parts one and two of the test and reading corrected for intelligence.

The above findings relating the Reading Decisions Test to reading corrected for intelligence were consistent with a significant ($p = .05$) relationship found in a pilot study using SCAT and STEP scores and a different form of the Reading Decisions Test. It was reasoned that a replication of these measures with a larger more differentiated sample might clarify the strength of this relationship and possibly confirm

the interaction found between reading and parts of the test.

Accordingly, the Test of Reading Decisions, the Lorge-Thorndike Intelligence Test and the Iowa Test of Reading Comprehension were administered to 6 fifth grade sections, N = 139, one year after the original testing. The second sample enjoyed a greater range in reading and intelligence and a slightly lower mean score in each. Reading = 7.2, IQ = 115.

In this sample high readers were designated as the top 25 boys and 25 girls on reading scores corrected for intelligence. Low readers were the bottom 25 boys and 25 girls on the same measure.

An analysis of variance of the type for repeated measures was performed on the two halves of open-mindedness score of the Reading Decisions Test (See Table 2).

Table 2

Analysis of Variance for Repeated Measures of Open-Mindedness Scores in Relation to Sex, Reading Corrected for IQ, and Part of the Test

Variable	ss	df	ms	F	p
A. Sex	230	1	230		
B. Reading	1	1	1		
C. Part of test	410	1	410	20.92	.001
AB	0	1	0		
AC	49	1	49		
BC	102	1	102	5.21	.05
ABC	18	1	18		
D, AB^1	9304	96	96.92		
DC, AB^2	1879	96	19.57		
	11993	199			

1. Used to test A, B, and AB.
2. Used to test C, AC, BC, ABC.

Findings yielded no main effects for sex or reading corrected for IQ, but a significant main effect ($p = .001$) was found for parts of the test. Examination of the scores showed that in this sample both high and low groups had higher open-mindedness scores at stop 2. The interaction between parts of the test and reading corrected for intelligence was also significant ($p = .05$). The high group showed a significant increase in open-mindedness between stops 1 and 2 ($t = 3.74$; $p = .01$) whereas the increase in the scores of the low group was not significant ($t = 1.20$). The interaction between reading corrected for intelligence and parts of the test was thus replicated in the new and larger sample.

Discussion

The purpose of this study was to answer three questions about the Reading Decisions Test. (1) Is it related to reading achievement corrected for intelligence? (2) Is it related to independent measures of Originality and Opinion formation? (3) Is it related to personality characteristics of independence, individuation, and esteem as measured by the Self-Social Symbols Task? Findings have yielded a negative answer to questions 2 and 3. No significant relationships were found among these variables. To question 1 a qualified affirmative must be given. A significant interaction between parts of the test and reading corrected for IQ was found and replicated in a larger sample, with the better readers increasing their open-mindedness as they proceeded through the story.

To interpret this finding one must consider the test of Reading Decisions and note particularly the difference between the circumstances pupils faced as they made judgments at stop one and stop two. At stop

one pupils had available to them a minimum of information, a title and a picture. At stop two, pupils had considerably more information, but all of this bore upon the first 30 statements which were repeated. The 30 new items were as possible as the original group had been and it was this set alone that was used to derive the open-mindedness score at stop two. Low readers did not differ in their performance from one stop to the next. High readers in contrast identified more statements as possible than they had before despite the interpolated task of re-evaluating their first decisions.

A simple explanation of the high group's performance might seem to be that these good readers perceived the strategy of the test, while the others did not. But at once it is clear that to do so they must have been more sensitive to the world of possibility in contrast to the world of right and wrong. Increased information appears to have elicited a greater tendency to question than to give answers among the able readers.

In a study by Robinson and Hall (1941) high and low college readers--a fair comparison with this younger but high achieving and intelligent group--were found to differ in their rate of reading fiction. While both groups began at the same rate, the high group shifted speed at about the midpoint and thenceforward a more efficient pace.

The experimentors concluded:

> Fast readers of fiction seem to be able to benefit by comprehension of the story read thus far in foretelling or otherwise facilitating the process of comprehension in the later parts of the story. As compared to unit by unit comprehension in a steady pace, this ability to benefit (increased comprehension) from present comprehension in reading later sections of the story must represent a higher level of reading ability.

The findings of this study suggest that a maintained awareness of possibilities and resistance to premature closure is probably one mechanism that facilitates reading efficiency. An implication for education might be that reading comprehension instruction should not be limited to the recitation format but rather seek ways to focus the learner's attention upon his intellectual process during a reading activity.

References

Bower, E. M. & Holmes, J. A. Emotional factors and academic achievement. Review of Educational Research, XXIX, No. 5, 528-543.

Gates, A. I. Character and purposes of yearbook. In Reading in the Elementary School, 48th Yearbook, Part II. Chicago: National Society for the Study of Education, 1949.

Gates, A. I. The role of personality maladjustment in reading disability. Pedagogical Seminary, 1941, LIX, 77-83.

Harris, A. J. How to increase reading ability, 4th Ed. New York: Longmans, Green, 1961.

Henderson, E. H. A study of individually formulated purposes for reading. Journal of Educational Research, 1965, 58, 438-441.

Henderson, E. H., Long, Barbara H. & Ziller, R. C. Self and social constructs of achieving and non-achieving readers. The Reading Teacher, 19,114-118.

Holmes, J. A. Personality characteristics of the disabled reader. Journal of Developmental Reading, 1961, 4, 111-122.

Long, Barbara H. & Henderson, E. H. Opinion formation and creativity in elementary school children. Psychological Reports, 1965, 17, 219-223.

Long, Barbara H. & Henderson, E. H. Originality, reading, and arithmetic. Perceptual and Motor Skills, 1965, 21, 553-554.

Long, Barbara H. & Henderson, E. H. Self-social concepts of disadvantaged school beginners. To be presented at APA Meeting, New York, 1966.

Long, Barbara H., Henderson, E. H. & Ziller, R. C. Developmental changes in the self concept during middle childhood. Unpublished manuscript, University of Delaware, 1964.

Long, Barbara H., Ziller, R. C., Ramana, K. V. & Reddy, V. E. Self-social orientations of Indian and American children. EPA Meeting, New York, 1966.

Robinson, F. P. & Hall, Prudence. Studies of higher level reading abilities. Journal of Educational Psychology, 1941, XXXII, 241-252.

Smith, Nila B. Reading instruction for today's children. Englewood Cliffs, N. J.: Prentice-Hall, 1963.

Strang, Ruth; McCullough, Constance M., Traxler, A. E. The improvement of reading. New York: McGraw-Hill Book Co., 1961.

Stauffer, R. G. Teaching reading as a thinking process. New York: Holt, Rinehart & Winston, Inc., (in press).

Tinker, M. A. & McCullough, Constance M. Teaching elementary reading, 2nd Ed. New York: Appleton-Century-Crofts, 1962.

Torrance, E. O. Manual for non-verbal form A Minnesota tests of creative thinking. Bureau of Educational Research, University of Minnesota.

Ziller, R. C., Alexander, Marea & Long, Barbara H. Self-social constructs and social desirability. Unpublished manuscript, University of Delaware, 1964.

Ziller, R. C. & Long, Barbara H. Self-social constructs and geographic mobility. Paper presented at EPA Meeting, Atlantic City, 1965.

Ziller, R. C., Megas, Jr. & Decencio, D. Self-social constructs of normals and acute neuropsychiatric patients. Journal of Consulting Psychology. 1964, 20, 50-63.

Study B. Self-social Constructs in Relation to Reading and Arithmetic

Abstract

Differential achievement in reading corrected for arithmetic was studied in relation to eight non-verbal measures of the self-concept: esteem, identification, dependence, individuation, power, centrality, group identification and complexity. High readers were found to have greater identification with others ($p = .005$), greater complexity of self-concept ($p = .005$), greater social dependence ($p = .01$), and a greater identification with others ($p = .05$). Interactions showed high reading boys and low reading girls closer to teacher and high reading girls and low reading boys higher in self-esteem.

Intercorrelations indicated two general characteristics of the high reader. (1) He has a self-concept which is highly differentiated and unique. (2) He is more clearly immersed in the social field and more closely allied with significant other people. These effects were found to be independent of IQ.

Study B: SELF SOCIAL CONCEPTS IN RELATION TO READING AND ARITHMETIC*

This study has applied a non-verbal method to the investigation of the self-social concepts of high achieving readers selected on the basis of high and low reading achievement in relation to arithmetic. It was assumed that a pupil's conception of himself in relation to others is a variable of psychological importance and one that will have an effect upon reading behavior. A second assumption was that differentially high and low reading achievement in relation to arithmetic (among able readers) represents performance that is near to or well below functional capacity but free from prolonged experiences of failure. It is proposed that characteristic patterns of self-other relationships will differentiate the high and low readers so defined and that these relatively stable personality styles will have relevance for instructional technique.

Related Research

Studies of personality variables and reading achievement are extensive but inconclusive. Reviews of the literature by Gates in 1941 and by Bower and Holmes in 1959 concurred in the conclusion that "there is no single personality pattern characteristic of reading failure." Holmes (1961) found certain personality variables related to success in reading in the primary grades, but these differences disappeared at the upper elementary and the secondary levels. Stewart (1950) found good and poor readers, matched for intelligence, sex and socio-economic level, different on the following personality traits: good readers were more dependent upon teacher, fearful of parents and in need of friends; poor readers were more aggressive and had relatively weak and easygoing fathers.

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* This study was presented at the annual convention of the International Reading Association, Dallas, 1966.

In an exploratory study using an early form of the Children's Self Social Symbols Test (Henderson, Long & Ziller 1965), the present authors found a different pattern of contrasts between achieving and disabled readers who were matched for sex and intelligence. Here the good readers revealed a greater degree of individualism and of social independence. Differences in samples and in measures, particularly in the definition of reading retardation, have contributed to varied findings. The question also remains whether these differences are related to reading achievement or to the negative experiences of failure.

A different approach to this problem has been followed in a series of studies in which differential achievement in reading and arithmetic (verbal versus number proficiency) has been related to a variety of cognitive, social, and background variables. Here too findings show a considerable range, yet some consistencies emerge. Overprotection (Levy 1943), strong mother influence (Plank & Plank 1954), absence of father from home (Kuckenberger 1962 & Carlsmith 1964) have been found associated with high verbal achievement. Here is strong support for the popular stereotype that associates verbal behavior with the feminine role.

Maccoby and Rau (1962) studied a carefully selected sample of fifth-grade pupils who differed in math and verbal achievement. One set of findings showed the high verbal group different from its counterpart in measures of social dependency. Though self-ratings on dependency were low for the verbal group, peer ratings were high. Both boys and girls, however, said they would "often ask for help" from mother whether they needed it or not, and these mothers were themselves rated by examiners

as "intrusive" and "demanding." Both boys and girls in the verbal group evidenced a "fairly high level of tension"; they were more easily distracted and more quick to say "sure" in ambiguous circumstances. Girls, however, appeared to find the verbal role less disruptive. They were low in masculine choice, more creative, and better able to delay gratification. These findings appear consistent with the idea that high verbal achievement is characteristically feminine.

In general, Maccoby and Rau found high verbal children less stable and less mature than achievers in arithmetic. High number children were characterized as self-sufficient, popular, competent, able to reserve judgement and resist distraction. While there is considerable agreement about the feminine character of the verbal role, there is less agreement about its tendency toward instability. Roe (1956) for example, found verbal subjects socially oriented while math subjects were comparatively non-social. Monroe (1946) found no differences between verbal and math subjects in general adjustment but characterized the verbal group as "subjective" and the math group as "objective" on the basis of movement and form responses on the Rorschach.

Method

The present study is part of a larger investigation in which social and cognitive variables are related to reading achievement variously defined. The non-verbal method for the measurement of self-social concepts was designed for a series of studies investigating the development of self-social orientations from grades 1 - 12. It has been applied to a

variety of problems and populations (Ziller, Megas & Decencio, 1963; Henderson, Long & Ziller, 1965; Long & Henderson, 1966; Long, Ziller, Ramana & Reddy, 1966).

In this method, a subject, working in a test booklet, selects and arranges symbols to represent himself in relation to salient other people. The assumption is made that individuals are able to communicate various aspects of their self-social system symbolically and that certain symbolic patterns have common meaning. It is assumed, for example, that physical distance in the test may represent psychological distance in the person's life space. Hierarchies of power, or dimensions of importance or value are also assumed to be reflected in specific symbolic patterns, as are degrees of self-centrality, self-complexity, and self-differentiation from peers. The validity of these assumptions is supported by a variety of findings related to the construct validity of particular items in the test.

In the present form of the test, attention is focused upon seven components of the self -- usually in relation to salient other people. These include esteem, identification, dependency, individuation, power, centrality, and complexity. These aspects of the self are assumed to be part of an integrated system. They represent dimensions upon which the self as a social object may be described. They have been found to be independent of IQ. Operational definitions of these components are briefly described as follows:

In the measures of <u>esteem</u> the subject places the self and five other persons in a row of circles. Positions to the left are assumed to represent greater importance for the self. This assumption is supported

by a variety of findings in which the stimulus person was found to be significantly related to position in row. Children of both the United States and South India, for example, placed the "cruel", "unsuccessful" or "unhappy" person to the right, and the "happy" person or "good athlete" to the left ($p = .001$).

Identification is measured by two kinds of items. In the first of these, another person (father, mother, teacher, or friend) is placed to the extreme right or extreme left in a row of circles. The subject selects one of the other circles to represent the self. Physical distance is assumed to represent psychological distance, with greater identification associated with closer placement of the self to the other person. This assumption is supported by the finding that children who were separated from their natural fathers placed the self significantly further from father than did those living with father ($p = .02$). Likewise, children rated by their teacher as "shy" with teacher placed the self further from teacher than did those rated most "friendly" with teacher ($p = .05$).

In the second measure of identification -- termed group identification -- the subject arranges array of ten persons including the self into groups. The measure consists of the number of persons in the self-group, and has been found to differentiate neuropsychiatric patients and normals, with the patients including fewer others in the self-group.

In the measure of dependency the subject draws a circle within or without a group of others. Greater social dependency is assumed to be represented by the placement of the self within the group of others. This assumption is supported by the finding that children placing the self

within the group preferred to pursue more group activities than did those placing the self outside the group ($p = .01$).

In the measure of individuation, the subject chooses a circle to represent the self which is either the same or different from those representing peers. The choice of the "different" circle is assumed to express a greater degree of individuation. This assumption is supported by the finding that twins represented the self more often as the "same" than did non-twins of the same age, sex and class in school ($p = .05$). Children who had moved frequently represented the self more often as "different" than did those who had lived all their lives in a single community ($p = .05$).

In the power items, the subject selects a circle to represent another person which is either above, even with, or below that representing the self. A higher position for the other person is assumed to represent less power for the self. This assumption is supported by the finding that children placed a friend lower than they placed teacher in a separate item ($p = .01$ in several samples).

In the centrality items, the subject draws a circle to represent the self and one to represent a friend within a large circle. The placement of the self closer to the center of the circle is assumed to represent greater self-centrality. It was found that neuropsychiatric patients placed the self more often in the central position than did controls ($p = .05$), as did sociometric isolates compared with sociometric stars ($p = .005$), and children who had moved frequently compared to those who had lived in a single community ($p = .01$).

In the complexity items, array of three figures varying in complexity, which were derived from Glanzer and Clark (1963, 1965), are presented to the subject. He selects one of the figures to represent the self, with a higher score associated with the more complex figures. This item was used for the first time by the present authors in this study.

Subjects and Design

The Self-Social Symbols Tasks were administered to 81 fifth grade pupils in three high ability sections of the Quarryhill Elementary School, Yardley, Pennsylvania. These subjects were largely advantaged, white upper-middle class children living in a young executive section of that community. Scores for intelligence (Lorge-Thorndike Intelligence Test) reading and arithmetic (Iowa Tests of Basic Skills) were obtained from the school records. Mean scores were as follows: IQ = 122.0, Reading grade level = 8.0, Arithmetic grade level = 6.4. It was thought that these children represented a highly successful academic group. To select high and low readers in relation to arithmetic, reading comprehension scores were regressed on those for arithmetic concepts. This difference score was found to correlate +.90 with reading, .00 with arithmetic and +.35 with intelligence. From the total sample of 81, the top and bottom third for boys (N = 11) and for girls (N = 16), were designated high and low readers.

Results

Reliability coefficients (split-half, corrected for length) were completed for each measure. These ranged from .65 to .94 with a median of .85 with the exception of power. The latter measures did not

attain a satisfactory level and were henceforth dropped from future analyses.

Analyses of variance (sex by reading achievement) yielded significant differences between high and low readers on the following measures from the Self-Social Symbols Tasks. High readers showed:

1. greater individuation ($p = .005$)
2. greater complexity of self concept ($p = .005$)
3. greater social dependency ($p = .01$)
4. greater identification with friend ($p = .005$), with father ($p = .05$), and in the grouping task placed more others ($p = .05$), with the self and more often placed parents with the self ($p = .05$).

Two interaction effects emerged:

1. high reading boys and low reading girls were closer to teacher ($p = .05$)
2. high reading girls and low reading boys and higher self-esteem ($p =$ about $.05$).

Because of the numerous significant effects and because reading and IQ were confounded in the criterion measure used to form the groups, all dependent measures were intercorrelated with those for IQ, reading and arithmetic.

Significant positive relationships were found between reading and the following measures from the Self-Social Symbols Test: complexity ($r = +.37$), individuation ($r = +.27$) and dependency ($r = +.32$). Individuation and complexity were found positively related to each other, ($r = +.37$) and dependency was found positively related both to esteem ($r = +.40$) and the identification measures, mother ($r = +.48$), father ($r = +.35$), friend ($r = +.33$) and number of others ($r = +.29$) and parents placed with self ($r = +.30$).

Only one measure, complexity, showed a significant relationship to IQ ($r = +.21$). Here partial correlations showed a significant relationship between reading and complexity with IQ partialed out ($r = +.31$) and a non-significant relationship between IQ and complexity with reading partialed out ($r = +.01$).

Discussion

A study of the intercorrelations among the self-social variables adds meaning to differences between high and low readers. The close relationship between social dependency and identification with significant other people suggests that these may be similar responses. Placing oneself in the group of others (social dependency) and placing more persons with the self, and placing the self closer to significant other persons (identification) may be considered a single self other pattern. This finding would seem to indicate that the high readers are indeed more socially oriented as was suggested by Roe (1956). Such a pattern would be consistent with a theory of reading which holds that the process is in part a dialogue in which the reader experiences a continual social interaction with persons both real and imaginary. From this point of view social orientation should indeed facilitate achievement in reading.

Whether or not the social orientation of the high reader is associated with fear of rejection or with a positive liking for people remains unanswered by this study. A similar pattern of high social dependency on the part of disabled readers was interpreted by the present authors as a dependent withdrawal or submersion in the group. Maccoby and Rau (1962) also interpreted the dependency of their high readers as a negative personality trait. It is equally possible, however, that one may seek

the group condition for active purposes of participation and even leadership. The positive correlation between self esteem and dependency suggests the possibility of this second interpretation for subjects in this sample. The finding in earlier developmental studies that social dependency increases over the grades also suggests that this variable may reflect social maturity.

The second joinder revealed by the intercorrelations is that between individuation and complexity of the self concept. Here a significant relationship is found between a response which selects a symbol for self that is different from most of those representing others and a response which picks a more complex figure to represent the self. This finding appears reasonable because the more complex figures were also more unusual. Not only may the high reader of this sample be characterized as socially oriented, but also he may be seen as one who discriminates between himself and others. This does not appear like the behavior of an individual seeking group anonymity; rather it suggests the active participant. The joint findings of sociablility and individuation among achieving readers appears consistent with a theory of personality that asserts greater maturity of the self-concept to individuating experiences. Also this tendency to discriminate self from others appears harmonious with the demands of the reading task in which one must continually weigh ones values, thoughts, and anticipations against those of the author and the characters he directs.

The two interactions are of interest because they concur with the most consistent finding among studies that have investigated the differential achievement in reading and numbers. Both reflect the relatively feminine position for reading and masculine position for arith-

metic. Thus it was found that for boys high esteem was associated with low achievement in reading relative to arithmetic. For girls high esteem was associated with high achievement in reading. While developmental studies have shown pupils moving away from teacher as they advance through the elementary grades, it is the high reading boys and the high math girls who are closest to teacher in this sample.

Summary

What then are the self-other patterns of the high achiever in reading relative to arithmetic? The findings of this study suggest that the high reader in this sample is socially oriented and sees himself as both different and complex. For boys this is a relatively low esteem role and they relate more closely to teacher. For girls the verbal role is more compatible. Further research is needed to determine the motives of social dependency.

The present authors view these findings as consistent with a theory of reading which emphasizes the demand for vicarious social interaction as well as for the application of the cognitive and perceptual skills. The high correlation between esteem and social dependency along with the parallel attribute of greater individuation and complexity suggests that the social dependency of the able reader has, at least in part, positive rather than negative origins. Yet it appears clear that the verbal role is characteristically feminine and as such is lacking in prestige for boys.

References

Bower, E. M. & Holmes, J. A. Emotional factors and academic achievement. Review of Educational Research, XXIX No. 5, 528-543.

Carlsmith, Lyn. Effect of early father absence on scholastic aptitude. Harvard Educational Review, 1964, 3-21.

Gates, A. I. The role of personality maladjustment in reading disability. Pedagogical Seminary, 1941, LIX, 77-83.

Henderson, E. H., Long, Barbara H. and Ziller, R. C. Self-social constructs of achieving and non-achieving readers. The Reading Teacher, 1965, 19, 114-118.

Holmes, J. A. Personality characteristics of the disabled reader. Journal of Developmental Reading, 1961, 4, 111-122.

Kuckenberg, Carolyn. The effects of father absence. Unpublished manuscript (thesis prospectus), Laboratory of Human Development, Harvard.

Levy, D. M. Maternal Overprotection. New York: Columbia University Press, 1943.

Long, Barbara H., Henderson, E. H. Self-social concepts of disadvantaged school beginners. Paper presented at APA Meeting. New York, 1966.

Long, Barbara H., Henderson, E. H. and Ziller, R. C. Developmental changes in the self-concept during middle childhood. Unpublished manuscript, University of Delaware, 1965.

Long, Barbara H., Ziller, R. C., Ramana, K. V. and Reddy, V. E. Self-social orientations of Indian and American children. Paper presented at APA Meeting, New York, 1966.

Maccoby, Eleanor E., and Rau, Lucy. Differential Cognitive Abilities Final Report, U. S. Office of Education, Cooperative Research Project No. 1040, 1962.

Plank, Emma H. & Plank, R. Emotional conponents in arithmetic learning as seen through autobiographies. The Psychoanalytic Study of the Child, Vol. IX. New York: International University Press, 1954.

Roe, Ann. The Psychology of Occupations. New York: John Wiley, 1956.

Stewart, R. S. Personality maladjustment and reading achievement. American Journal Orthopsychiatry, 1950, 20, 410-417.

Ziller, R. C., Alexander, Marea and Long, Barbara H. Self-social constructs and social desirability. Unpublished manuscript, University of Delaware, 1965.

Ziller, R. C. and Long, Barbara H. Self-social constructs and geographic mobility. Paper presented at EPA Meeting, Atlantic City, 1965.

Ziller, R. C., Megas, J. and Decencio, D. Self-social constructs of normals and acute neuropsychiatric patients. Journal of Consulting Psychology, 1964, 20, 50-63.